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all parts of the seedling, from whence it extends to all parts of the mature plant; that is, into the tissues of the stem, leaf, flower, and fruit. The ovary becoming infected, the mycelium enters the seed coats of the developing seeds, but the embryo and endosperm are free from infection. The fungus was isolated in pure cultures, and the seeds sterilized, so that a synthesis of the fungus of *Calluna* was accomplished. It was found that in case this specific fungus did not infect the growing seedling, it did not develop roots, and suffered complete inhibition of growth, remaining alive but rootless for several months. The fungus concerned is said to resemble the genus *Phoma*, and the author proposes that the species should be placed in a new subgenus, for which the name *Phyllophoma* is suggested.—J. M. C.

Development and distribution of Leguminosae.—ANDREWS[7] has brought together all the data dealing with the development and distribution of Leguminosae, and has reached certain conclusions of general interest. His thesis is that "the present distribution of plants and animals is the algebraic sum of the responses made by organisms to their changing environment during the whole of the known geological record, and the present adjustment of the activities involved has been obtained only after ages of development during various geographical changes." This is a problem, therefore, which involves the cooperation of geology, geography, and biology. ANDREWS finds that many uniform types of Leguminosae are widely diffused through the tropics, and that in extra-tropical countries these uniform tropical forms are represented by specialized types, which are mainly xerophytic. The details are fully presented, and it is thought that such study will throw light upon the nature of former land connections. For example, the author thinks that the Leguminosae show that New Zealand was separated from the tropics early in the differentiation of the family, while Australia was cut off at a date considerably later.—J. M. C.

Growth of Nereocystis.—Accurate data concerning the behavior of the large marine algae are much needed, the usual statements of the textbooks being vague and often misleading. This need promises to be supplied by the work of the Puget Sound Marine Station, whose first publication describes the growth of the blades of *Nereocystis Luetkeana*. Miss FALLIS[8] finds that this species grows as well when loosened from its foothold on the rocks, the holdfast serving only to fix the plant. Nor is the stipe, including the bulb, necessary for the growth of the blade, small pieces from which can grow independently. The growing region is not at the place of transition, between the blade and stipe, but its basal limit is at the beginning of the flattened part of the blade, while its terminal limit is difficult to determine, because growth gradually decreases toward the tip of the blade.

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[7] ANDREWS, E. C., The development and distribution of the natural order Leguminosae. Jour. Proc. Roy. Soc. N.W. Wales **48**:333–407. 1914.

[8] FALLIS, ANNIE L., Growth of the fronds of *Nereocystis Luetkeana*. Puget Sound Marine Station Publ. **1**:1–8. 1915.

A second paper, by Miss SHELDON,[9] deals with the growth of the stipe. It was found that the region of maximum growth in mature plants is 2–4 feet below the blade, the rate decreasing in both directions. In July the rate of growth was found to be about an inch a day.—J. M. C.

Ferns of the oriental tropics.—The richness of the fern vegetation of the tropics is being emphasized by the work of COPELAND.[10] In the papers cited, new species are described in the following genera: *Adiantum*, *Aglaomorpha* (a new subgenus *Holostachyum*, including two other species, being described), *Angiopteris*, *Asplenium*, *Athyrium* (6), *Balantium*, *Cyathea* (6), *Davallia*, *Dryopteris* (6), *Leptochilus*, *Loxogramme* (2), *Marattia*, *Microlepia*, *Oleandra*, *Ophioglossum*, *Polypodium* (8), *Prosaptia*, *Pteris*, *Tectaria* (4), *Trichomanes*, and *Vittaria*. The genera *Diplora* and *Triphlebia* were found to be invalid, because founded upon inconstant and "illusory" features, and should be included in *Phyllitis*, which comprises only three well defined species in the Malay-Polynesian region.—J. M. C.

Sphagnum bogs of Alaska.—RIGG[11] has noted the peculiarities of the flora of some Alaskan peat bogs and finds that while sphagnum occurs in many different habitats in Alaska, only where there is an absence of drainage do bogs accompany it. The peat in the bogs visited had a maximum depth of only 2.5 ft. Aside from the sphagnum, *Empetrum nigrum* is the most abundant and uniform in its occurrence, but *Ledum palustre*, *Kalmia glauca*, *Oxycoccus oxycoccus*, and *Drosea rotundifolia* are among other characteristic species. The bogs occur surrounded by treeless areas, by tundras, or by coniferous forests, and vary much in area.—GEO. D. FULLER.

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[9] SHELDON, SARAH M., Notes on the growth of the stipe of *Nereocystis Luetkeana*. *Ibid*. **1**:15–18. 1915.

[10] COPELAND, E. B., The ferns of the Batu Lawi Expedition. Appendix III. Roy. Agric. Soc. (Straits Branch). no. 63. 71–72. 1912.

———, Some ferns of northeastern Mindanao. Leaflets Philipp. Bot. **5**:1679–1684. 1913.

———, Notes on some Javan ferns. Philipp. Jour. Sci. **8**:139–145. *pls. 2–4*. 1913.

———, On *Phyllitis* in Malaya and the supposed genera *Diplora* and *Triphlebia*. *Ibid*. **8**:147–155. *pls. 5–7*. 1913.

———, New Papuan ferns. *Ibid*. **9**:1–9. 1914.

———, New Sumatran ferns. *Ibid*. **9**:227–233. 1914.

[11] RIGG, G. B., Notes on the flora of some Alaskan sphagnum bogs. Plant World **17**:176–183. 1914.